REMARKS

This amendment is included with a request for continued prosecution. Attached is the fee therefore. As understood, there is no fee for additional claims previously paid for with a request for continued prosecution (RCE) as explained in M.P.E.P. 706.07(h) III D (page 700-85 Rev. 1, Feb.2003).

Claim 40 is cancelled.

Claims 1-13 and 25-40 stand rejected under 35 USC 112, second paragraph, as being indefinite. The Examiner has suggested replacing "non-unique phase center" with "non-unique phase centers."

The Examiner previously accepted the use of "a plurality of phase centers." Accordingly, Applicant has used that terminology in the rejected claims rather than the proposed "non-unique phase centers." Applicant had previously utilized the term "non-unique phase center" to distinguish the prior art. Instead, the Examiner has convinced Applicant that the concept may be so novel that it is better to simply specify the features of such an antenna rather than use this terminology. Because the features of this antenna method/system clearly distinguish the present invention from the cited art, Applicant has therefore removed the term "non-unique phase center" from claims 1 and 25 to thereby respectfully obviate the rejection. Applicant submits the claims now clearly distinguish the prior art as discussed below whereby reconsideration of the amended claims is respectfully requested.

Applicant has amended claim 41 as per the Examiner's comments.

In light of the above amendments and remarks, Applicant now submits that the rejection under 35 USC 112 to claims 1-13 and 25-40 is respectfully traversed.

Claims 1- 44 stand rejected under 35 USC 102(b) as being anticipated by Lightsey (USPN 6,005,514). Lightsey discloses use of several non-aligned antennas to form a "distributed antenna" (see discussion below), i.e., the antenna beams are pointed in different directions and, according to the Examiner, therefore each antenna used by Lightsey has a different phase center. For instance, referring to Lightsey FIG. 7 and FIG. 11, there are four non-aligned antennas 10_1, 10_2, 10_3, and 10_4 , which point in four different directions that correspond to four boresights and four phase centers.

However, Lightsey does not disclose a distributed antenna wherein each phase center is associated with a transmitter, and wherein the number of phase centers is equal to the number of transmitters from which transmitter signals are received as specified in main claims 1, 14. Lightsey does not disclose a distributed antenna wherein each phase center is associated with a respective one of the plurality of transmitters from which transmitter signals are received as specified in main claims 1, 14. Instead, if the Lightsey distributed antenna system has four antennas, there will apparently always be exactly four phase centers and four boresights regardless of the number of transmitters utilized. Moreover, the location of each phase center with respect to the Lightsey antenna element(s) apparently does not change position with respect to the antenna elements as the relative orientation between the antennas and the transmitters change as specified in claims 1, 25, 41. If the phase center changed with respect to the Lightsey

antenna elements, i.e., with respect to the geometry of the Lightsey antenna elements, one would not know where the "boresight" used by Lightsey is, i.e., the "boresight" would be undefined. If the "boresight" were undefined, then Lightsey apparently provides no solutions whatsoever. Accordingly, the rejection is respectfully traversed because Lightsey does not disclose all claim elements as required for a rejection under 35 USC 102(b).

As for claim 33, neither Lightsey, Fenton et al. nor Ray et al. show a continuous antenna element with multiple phase centers. Lightsey, Fenton et al. and Ray et al. show only "distributed antenna" systems (see discussion below) which have discrete antenna elements.

Claims 1-44 stand rejected under 35 USC 102(a) as being anticipated by Fenton et al. (USPN 6,128, 557). The same comments stated above apply to Fenton et al. and Ray et al.

Fenton et al, shows oppositely-directed antennas which, according to the Examiner, have different phase centers.

Fenton et al. does not disclose an antenna wherein each phase center is associated with a transmitter and the number of phase centers is equal to the number of transmitters. If the Fenton et al. system has two antennas, then the Fenton et al. system will apparently have only two phase centers regardless of the number of transmitters. Fenton et al. does not disclose an antenna with a plurality of phase centers wherein each phase center corresponds to one transmitter. Moreover, Fenton et al. does not disclose an antenna where the location of each phase center with respect to the Fenton et al. antenna elements changes position as the relative orientation between the antennas and the transmitters changes. Accordingly, the rejection is respectfully traversed because Fenton et al. does disclose all claim elements as required for a rejection under 35 USC

102(a).

It is respectfully noted that Fenton et al. says in Col 1, lines 37-39 that it is impossible for a single antenna to simultaneously view all transmitters if the antenna is mounted on a rotating body because as the body rotates the antenna will be blocked from continuously simultaneously viewing all the transmitters. Applicant provides a solution to this "impossible" problem. An example of a single continuous antenna element which views, i.e. receives signals from, all transmitters simultaneously even if the antenna is mounted on a rotating body whereby the body blocks at least part of the "distributed antenna" view is the wrap around antenna shown in Applicant's FIG. 1 and also in FIG. 5. Accordingly, what was considered impossible by experts such as Fenton et al. as explicitly stated in the cited prior art, now is shown to be possible by use of Applicant's invention. Claim 33 describes a continuous wrap around antenna element as shown in Applicant's FIG. 1 and FIG. 5 which plainly operates in a manner previously considered impossible by antenna experts such as Fenton et al.

Claims 1-44 stand rejected under 35 USC 102(a) as being anticipated by Ray et al. (USPN 6,188,357). Ray et al. discloses a system which, according to the Examiner, apparently has five phase centers shown in FIG. 2 at 41p, 43p, 45p, 47p, and 49p. Ray et al. does not disclose an antenna wherein each phase center corresponds to a transmitter and the number of phase centers is equal to the number of transmitters. If the Ray at al. system has five antennas, apparently there will also be exactly five phase centers, regardless of how many transmitters there are. Moreover, Ray et al. does not disclose an antenna where the location of each phase center with respect to the Ray et al. antenna elements changes position as the relative orientation

between the antennas and the transmitters change. Accordingly, the rejection is respectfully because Ray et al. does not disclose all claim elements as required for a rejection under 35 USC 102(a).

Some of the prior art considered pertinent, i.e., Lightstone, Tittensor et al., Tranquilla et al., and Taggert et al., discuss problems associated with phase centers that change in physical location with respect to the physical antenna elements, but this prior art does not disclose that an antenna may have an equal number of phase centers as transmitters wherein each phase center corresponds to a transmitter, and also does not disclose any means for providing location information in this scenario. The Taggert et al. reference appears to state that if two phase centers occur simultaneously then no location solution may be possible even using a Cray computer for analysis other than simply attempting to assign a unique phase center to the antenna (see page 1050, discussion in col. 1). This procedure is unnecessary and undesirably inaccurate according to the teachings of the present invention.

For the record, the Examiner has chosen a much broader term for distributed antenna than might sometimes be used in the art wherein if the distributed antenna is comprised of separate elements, it might be assumed by some that there is mutual electromagnetic coupling between the separate elements. Clearly, at least the Lightsey and Fenton "distributed antennas" are not mutually coupled. Since this definition of distributed antenna is not necessary distinguish the prior art, Applicant respectfully submits the term should remain as broadly defined by the Examiner because this was the examination criteria, unless Applicant specifically amends the claims to restrict the definition hereinafter.

Also, although not necessary for patentability and therefore not discussed further, it appears that numerous of the dependent claims show features not disclosed in Lightsey, Fenton, and Ray. See, for instance, claims 8, 9, 10, 11, 12, 13 and other related claims which discuss solutions not remotely contemplated by the prior art.

Summary

In light of the above remarks and amendments, Applicant now therefore respectfully submits that the application presently stands in condition for allowance.

Respectfully submitted,

Date: May 13, 2004 By James M Cate

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